

WHAT IS CLAIMED IS:

1. A process for making a refractory metal part comprising:
 - (a) loading powder metal particles into a hopper for feeding into a laser additive chamber,
 - 5 (b) loading a substrate into the laser additive chamber,
 - (c) feeding the powder metal powders into the additive chamber onto successive points on the substrate in a linear trace,
 - (d) melting the substrate and the powder with a laser beam and building up multiple coatings of a controlled microstructure,
 - 10 (e) tracing the substrate over a selected area with a combined deposition and melt beam and building up a coating of a controlled microstructure in multiple layers, and
 - (f) building up a deposit from the coating and forming a refractory metal part.
- 15 2. The process of Claim 1, wherein the deposit built up from the coating is a fully dense deposit.
3. The process of Claim 1, wherein the process is carried out under inert conditions.
4. The process of Claim 3, wherein the conditions include argon,
20 at or near or below atmospheric pressure.
5. The process of Claim 1, wherein the process is carried out under a hard vacuum.
6. The process of Claim 1, wherein the laser beam generates sufficiently high heat to create conditions that purify the powder and the
25 refractory metal part.
7. The process of Claim 1, wherein the refractory metal part is a sputtering target.
8. A refractory metal part made by the process of Claim 1.
9. A method for rejuvenating a tantalum sputtering target
30 comprising subjecting an eroded region of a tantalum sputtering target

to plasma deposition, forming a fully dense coating, and thereby rejuvenating the tantalum sputtering target.

10. The method of Claim 9, wherein the tantalum sputtering target has a backing plate and the target is rejuvenated without debonding the backing plate from the target.

11. A sputtering target made by the method of Claim 9.

10. A method for rejuvenating a tantalum sputtering target comprising subjecting an eroded region of a tantalum sputtering target to laser sintering, forming a fully dense coating, thereby rejuvenating the tantalum sputtering target.

11. The method of Claim 10, wherein the tantalum sputtering target has a backing plate and the target is rejuvenated without debonding the backing plate from the target.

12. A sputtering target made by the method of Claim 10.

- 15 13. A method for rejuvenating a tantalum sputtering target comprising subjecting an eroded region of a sputtering target to hot isostatic pressing, forming a fully dense coating, and filling the eroded region of a tantalum sputtering target, thereby rejuvenating the tantalum sputtering target.

20 14. A sputtering target made by the method of Claim 13.